

REMARKS

This Amendment is in response to the Office Action dated September 10, 2004. In the Office Action, the Examiner rejected claims 1-8 and 11 under 35 U.S.C. § 102(e) as being unpatentable over Allen et al., U.S. Patent No. 6,532,558 (hereinafter *Allen*). Claims 9, 10 and 12 are rejected under 35 U.S.C. § 103(a) as being unpatentable over *Allen* in view of Philyaw, U.S. Patent No. 6,757,715 (hereinafter *Philyaw*).

Claim 1 is amended, as shown above, to correct an antecedent basis error, while claim 9 has been amended to more clearly recite features of the claimed invention. Claims 1-12 remain pending in the application. For the reasons set forth below, the Applicants respectfully request reconsideration and allowance of all pending claims.

CLAIM REJECTIONS - 35 U.S.C. § 102

A claim is anticipated only if each and every element of the claim is found in a single reference. M.P.E.P. § 2131 (citing *Verdegaal Bros. v. Union Oil Co. of California*, 814 F.2d 628 (Fed. Cir. 1987)). "The identical invention must be shown in as complete detail as is contained in the claim." M.P.E.P. § 2131 (citing *Richardson v. Suzuki Motor Co.*, 868 F.2d 1226 (Fed. Cir. 1989)).

With respect to claim 1, the Examiner asserts *Allen* teaches,
a method for testing a computer system board comprising:

loading the computer system board into a test apparatus (see col. 5, lines 6-28);

automatically coupling a power input to the circuit board via the test apparatus (see col. 3, lines 36-42 and col. 4, lines 7-42);

automatically performing a plurality of computer system board tests (see col. 4 line 59 to col. 5 line 5 and col. 6, lines 42-52); and

storing results of the automatic testing (col. 1, lines 12-20).

Applicants respectfully assert that *Allen* does not teach all of the claim elements of claim 1.

Allen discloses a method and apparatus for analog testing of hot-plug circuits on an active computer backplane. By way of example, the embodiments disclosed by *Allen* refer to techniques of testing PCI (peripheral component interconnect) slots in an active PCI backplane. During a test sequence, an external tester 103 is manually connected to a test connector 102 that is mounted on an active computer backplane including a PCI bus with multiple PCI slots, as shown in Figure 1. Control signals are provided by external tester 103 via test connector 102 to a hot-plug controller, which is used to control power supplied to each PCI slot. A PCI test adapter 53 (Fig. 3) is installed in a PCI slot to provide controllable electrical loading of the slot.

With respect to the statement that *Allen* teaches “Automatically coupling a power input to the circuit board via the test apparatus (see col. 3, lines 36-42 and col. 4, lines 7-42), applicants respectfully assert that these elements are not disclosed in the recited text. In particular, col. 3, lines 36-42 concerns a discussion of hot-plug service 28, which is a service generally supplied by an operating system vendor. The hot-plug service is used to provide control signals to a hot-plug PCI slot to enable a board to be removed or added during run-time without having to shut down the platform. Col. 4, lines 7-42 concerns a discussion of the conventional technique to remove (lines 7-24) and add (lines 25-42) an adapter card 50 to one of (hot plug PCI) slots 46 (see Figure 2). These operations have nothing to do with testing a computer system board, but rather concern operations that are normally employed to remove an adapter card and insert an adapter card into a hot-plug PCI slot.

During the adapter card removal process, the hot-plug service is used to provide control signals (via hot-plug system driver 32) to hot-plug controller 38, which is used to turn off the power to the slot. This condition is reported to a user, and then the user may safely remove the adapter card 50 from the slot. In a similar manner, an adapter card may be added. First, the slot needs to be powered down. The user can then insert a new card into the slot, and inform hot-plug service 28 to turn the slot on

(provided power to the slot). This is effected hot-plug controller 38 via hot-plug system driver 32 in response to commands issued by the hot-plug service 28.

In further detail, the *Allen* method and apparatus work in the following manner. The objective is to test hot-plug circuits on an active computer backplane. A test connector 102 is added to a conventional active computer backplane. The test connector is coupled to provide input control signals to hot-plug controller 38. (Normally, such a test connector would does not exist – that is, a typical active computer backplane does not have a test connector of this type). The purpose of the test connector and the control signals lines between the test connector and the hot-plug controller is to enable the hot-plug controller to be controlled directly from commands issued by external test 103, rather than having to be controlled by hot-plug service 28. This enables the active computer backplane to be tested without having it installed in a computer system.

The active computer backplane is tested in accordance with the operations depicted in the flowchart of Figs. 4a and 4b. The external tester is used to provide control input signals to the hot-plug controller 38. As stated in col. 5, lines 14-28,

In a preferred embodiment, test connector 102 includes a GROUND signal 104, a #RESET signal 106, and three separate signals for each slot 46 on backplane 100: #SLOT_ON 108, TDO 110 and TCK 112. GROUND signal 104 is the backplane ground potential. #RESET signal 106 connects to each hot-plug controller chip 38. When #RESET signal 106 is asserted, the hot-plug controller chips 38 are held in reset and release control of hot-plug circuit 101. #SLOT_ON signal 108 is wired to each hot-plug circuit 101, such that when #RESET signal 106 is asserted, a specific hot-plug circuit 101 can be toggled on and off by asserting/de-asserting #SLOT_ON signal 108 through test connector 102. After hot-plug circuit 101 shuts off (e.g., overcurrents), hot-plug circuit 101 requires a toggle of #SLOT_ON signal 108 to turn the hot-plug circuit back on.

It is clear from above that there is not coupling of power input to the active computer board (e.g., platform 44) being tested. In addition, the external test is

manually connected to the backplane test connector, as depicted in block 162 of Figure 4a.

During testing of an active computer board, the active computer board does provide power input to test adapter card 53. However, test adapter card 53 is not being tested. Rather, test adapter card is used to provide controllable electrical loading on a slot that is currently being tested (e.g., one slot is tested at a time by inserting test adapter card 53 into that slot and performing a test sequence under which power is provided to the slot and test measurements are made.

It is clear from above the *Allen* does not teach or disclose the element of “automatically coupling a power input to the circuit board via the test apparatus.” Accordingly, the anticipation rejection of claim 1 is improper and should be withdrawn. Additionally, since each of claims 2-12 depend either directly or indirectly from claim 1, the rejections of these claims in view of *Allen* are improper for at least the same reasons.

With further respect to claim 2, the Examiner asserts *Allen* teaches the elements of,

determining a type of the computer system board (see col. 4 line 59 to col. 5, line 5); and

automatically supplying the computer system board with a corresponding set of power inputs during the automatic testing operations (see col. 6, lines 42-52).

Col. 4 line 59 to col. 5, line 5 merely discusses the configuration of backplane 100, “which is generally defined as a circuit board containing sockets where other circuit boards are plugged in.” Col. 6, lines 42-52 merely describe a test cycle that applies a nominal voltage load on a switched voltage for slot 46. “The nominal voltage load applied on the switched voltage is chosen such that application of the nominal voltage load should not cause the associated hot plug circuit 101 to shut down slot 46, if the hot plug circuit 101 is operating properly.”

In col. 6 line 53 to col. 7, line 2, a discussion of the preferred embodiment is provided that concerns the overcurrent limits for various voltage levels (3.3V, 5V, +12V, and -12V). There is no mention of determining a type of computer system board being tested and then automatically supplying that type of computer system board with a corresponding set of power inputs. Accordingly, the rejection of claim 2 is improper and should be withdrawn.

With further respect to claim 3, the Examiner asserts *Allen* teaches “sequencing a plurality of power input signals in response to corresponding power command signals provided by the computer system board (see col. 6, lines 43-67). The power command signals in *Allen* are not provided by the active computer backplane (the test device), but rather are provided by external tester 102 via test connector 102. For example, “At block 164, after external tester 102 has been connected to backplane tester 102, #RESET signal 106 is asserted by external tester 103 such that one or more hot plug controller chip(s) 38 on backplane 100 are held in reset, and release control of the hot-plug circuits 101 on backplane 100 (Col. 6, lines 33-39). Accordingly, the rejection of claim 3 is improper and should be withdrawn.

With further respect to claim 5, the Examiner asserts that *Allen* further teaches “that the plurality of system board tests include testing a video subsystem of the computer system board (see page [col.] 1, lines 22-27 and col. 3, lines 6-16).” Col. 1, lines 22-27 merely indicates that a local bus (such as PCI) may be connected to peripherals including video cards). Col. 3, lines 6-16 discusses types of hot-plug circuits backplanes supported by the *Allen* invention, which includes PCI. There is no testing of PCI cards during the testing under *Allen*. An active computer backplane is being tested using a test adapter card. There is no mention of testing PCI cards themselves. Accordingly, the rejection of claim 5 is improper and should be withdrawn.

With further respect to claim 6, the Examiner asserts *Allen* further teaches the claim element of automatically inserting one or more memory devices into

corresponding connectors on the computer system board (see col. 1, lines 12-20). The portion of the *Allen* specification, which is in the background section, says nothing about automatically inserting anything, much less automatically inserting one or more memory devices into corresponding connectors. Accordingly, the rejection of claim 6 is improper and should be withdrawn.

The applicants respectfully assert that similar rejection by the Examiner with respect to claims 7 and 8 are likewise not supported by *Allen*. In particular, with respect to claim 7, *Allen* does not teach automatically inserting a microprocessor into a corresponding connector on the computer system board. The text cited by the Examiner (col. 8, lines 35-56) concerns the use of a microprocessor on test adapter card 53 to apply, and does not concern automatic insertion of a microprocessor. Similarly, with respect to claim 7, there is no mention in col. 4 line 64 to col. 5 line 5 concerning automatically operatively coupling a peripheral card to an expansion slot. The test adapter card is manually inserted into slots 46. Accordingly, the rejection of each of claim 7 and 8 is improper and should be withdrawn.

CLAIM REJECTIONS - 35 U.S.C. § 103

To establish a *prima facie* case of obviousness, there must first be some suggestion or motivation to modify a reference or to combine references, and second be a reasonable expectation of success. The teaching or suggestion to make the claimed combination and the reasonable expectation of success must both be found in the prior art and not based on applicant's disclosure. Third, the prior art reference (or references when combined) must teach or suggest all the claim limitations. M.P.E.P. § 706.02(j) from *In Re Vaeck*, 947 F.2d 488, 20 USPQ2d 1438 (Fed. Cir. 1991). Where claimed subject matter has been rejected as obvious in view of a combination of prior art references, a proper analysis under § 103 requires, *inter alia*, consideration of two factors: (1) whether the prior art would have suggested to those of ordinary skill in the art that they should make the claimed device; and (2) whether the prior art would also

have revealed that in so making, those of ordinary skill would have a reasonable expectation of success. Both the suggestion and the reasonable expectation of success must be founded in the prior art, not in the Applicants' disclosure. *Amgen v. Chugai Pharmaceutical*, 927 F.2d 1200, 18 USPQ2d 1016 (Fed. Cir. 1991), *Fritsch v. Lin*, 21 USPQ2d 1731 (Bd. Pat. App. & Int'f 1991). An invention is non-obvious if the references fail not only to expressly disclose the claimed invention as a whole, but also to suggest to one of ordinary skill in the art modifications needed to meet all the claim limitations. *Litton Industrial Products, Inc. v. Solid State Systems Corp.*, 755 F.2d 158, 164, 225 USPQ 34, 38 (Fed. Cir. 1985).

The examiner must present a convincing line of reasoning as to why the artisan would have found the claimed invention to have been obvious in light of the teachings of the references. M.P.E.P. § 70602(j) from *Ex parte Clapp*, 227 USPQ 972, 973 (Bd. Pat. App. & Inter. 1985). Obviousness cannot be established by combining references without also providing evidence of the motivating force which would impel one skilled in the art to do what the patent applicant has done. M.P.E.P. § 2144 from *Ex parte Levengood*, 28 USPQ2d 1300, 1302 (Bd. Pat. App. & Inter. 1993) (emphasis added by M.P.E.P.).

Claims 9-12 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over *Allen* in view of *Philyaw*. As discussed above, amended claim 1 is patentable over *Allen*. Accordingly, any claim dependent on claim 1 is likewise patentable for at least the same reasons. Thus each of claims 9-12 is patentable over the combination of *Allen* and *Philyaw*.

With further respect to claims 9 and 10, the Examiner asserts that *Philyaw* teaches the elements of, "automatically connecting test electronics to at least input/output (I/O) port connector," and wherein there are at least two I/O port connectors, each having different connection axis. Claim 9 has been amended to clarify the I/O port connector is on the computer system board being tested. *Philyaw*

concerns a “Bar code scanner and software interface interlock for performing encrypted handshaking and for disabling the scanner in case of handshaking operation failure. There is no mention whatsoever in *Philyaw* of automatically connecting test electronics to at least input/output (I/O) port connector on a computer system board being tested. Accordingly, amended claim 9 and claim 10 are patentable over the combination of *Allen* and *Philyaw*.

With further respect to claims 11 and 12, the Examiner asserts that *Philyaw* teaches these elements. More specifically, claim 11 recites the further claim element of “determining a type of the computer system board; and automatically performing a particular set of computer system board tests corresponding to the type of computer system board that is determined.” There is no discussion in *Philyaw* for determining a type of computer system board. Under one embodiment of the present application, a barcode is scanned to identify a computer system board, with the identification used to look up the type of board in a database. The description of an operation of a bar code scanner does not read on this claim element. While *Philyaw* does discuss registering unique numbers associated with a scanner and software interface to a central registration service, there is no mention of using an identity of a computer system board obtained by scanning a barcode to identify a type of computer system board and then performing a particular set of computer system board tests corresponding to the type. Accordingly, the rejection of claims 11 and 12 are improper and should be withdrawn.

Overall, none of the references singly or in any motivated combination disclose, teach, or suggest what is recited in the independent claims. Thus, given the above amendments and accompanying remarks, independent claim 1 is now in condition for allowance. The dependent claims 2-12 that depend directly or indirectly on these independent claims are likewise allowable based on at least the same reasons and based on the recitations contained in each dependent claim.

If the undersigned attorney has overlooked a teaching in any of the cited references that is relevant to the allowability of the claims, the Examiner is requested to specifically point out where such teaching may be found. Further, if there are any informalities or questions that can be addressed via telephone, the Examiner is encouraged to contact the undersigned attorney at (206) 292-8600.

Charge Deposit Account

Please charge our Deposit Account No. 02-2666 for any additional fee(s) that may be due in this matter, and please credit the same deposit account for any overpayment.

Respectfully submitted,

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